## Capsule depolymerase activity of phages infecting the *Acinetobacter baumannii*-calcoaceticus complex

**Oliveira H., Costa A.R., Konstantinidis N., Nemec A., Shneider M., Dötsch A., Sillankorva S., Azeredo J.**

*University of Minho, Braga, Portugal*

To be able to enter and replicate in exopolysaccharide (EPS) slime or capsule surrounded bacteria, bacteriophages (phages) have evolved the ability to overcome the EPS struc-

ture by producing virion-associated proteins with polysaccharide depolymerization activities. We have studied phages infecting the Acinetobacter baumannii-Acinetobacter calcoaceticus (ACB) complex, which groups *A. baumannii, A. calcoaceticus, A. pittii, A. nosocomialis* and *A. seifertii* species. It is known that about 100 different capsule polysaccharide (CPS) synthetic loci are found in *A. baumannii* genomes alone. This situation is even more complex, with some strains of *A. baumannii* having nearly identical CPS synthetic loci to strains of *A. nosocomialis* or *A. pittii*, and supposedly producing identical CPS. We have isolated and characterized 21 phages infecting the ACB complex and demonstrate that they have specialized depolymerases that degrade polymers (e.g. capsular and structural polysaccharides) to facilitate their access to the hosts. To further characterize the phage-host interactions, we have sequenced bacterial genomes and mutated the CPS synthetic loci to create CPS-deficient mutants, to prove that the ACB phages recognize the CPS as the primary receptor. We further demonstrate that recombinantly expressed depolymerases are active and key components in the tail specificity apparatus of Podoviridae viruses. We could conclude that phages infecting the ACB complex represent a source of enzymes that degrade a complex variety of polymeric substances that can be further exploited as a serotyping scheme currently inexistent for Acinetobacter species.

# Book of abstracts

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